REMARKS

The Applicant respectfully acknowledges the Examiner' s comments on the Abstract of the Applicant's disclosure. In response, and in addition to amending the Abstract to correspond with currently amended independent claim 18, the Applicant has reduced the Abstract to less than 150 words and has eliminated all phraseology commonly employed in claims.

The Examiner has rejected claims 18-34 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, specifically referring to the calculation algorithm recited in claim 18. The Applicant acknowledges and respectfully traverses the indefiniteness rejection in view of the following remarks.

In response to the Examiner's rejection of claims 18-34 under 35 U.S.C. § 112, the Applicant has amended claim 18 herein above to more clearly and explicitly recite and define the limitations of the calculation algorithm recited in claim 18. In particular, the Applicant has amended claim 18 to recite that "the calculation algorithm is selected such that calculated nominal output value represents a corresponding value of the monitored output signal for the current value of the check variable when there are no errors in the drive train components."

Stated another way, the calculation algorithm is to emulate the processes and operations of the drive train components of the transmission route of the drive train control signal under consideration. The specifics of the algorithm are thereby determined and defined by the processes and operations of the drive train components of the transmission route and may thus differ in detail between one control signal and another. The elements and limitations of the calculation algorithm are, however, and fully and adequately defined and pointed out under the requirements and provisions of 35 U.S.C § 112. by this definition.

Next, the Examiner has rejected claims 18-25 under 35 U.S.C. § 103(a) over Sommer `999 and claims 26-34 under 35 U.S.C. § 103(a) over Sommer `999 in view of Schmidt `223. The Applicant acknowledges and respectfully traverses the obviousness rejections in view of the following remarks.

First considering the present invention as recited in the claims as amended herein above, it will be noted that the Applicant has amended claim 18 to essentially incorporate the recitations and limitations of claims 19-21 to thereby more clearly and explicitly and more fully recite and define the present invention and the elements and limitations by which the present invention as recited in claims 18 is patentably distinguished over and from Sommer `999 and Schmidt `223. It will also be noted that, for the same reasons, the Applicant has also amended claim 18 by restating and rephrasing many of the elements and limitations of claims 18-21 to thereby more clearly and explicitly and more fully recite and define the present invention. It will be noted, however, that all of these amendments are fully supported by the specification and claims as originally filed, so that these amendments to not add any new subject matter to or alter the subject matter or scope of the invention, the specification or the claims.

It will also be noted that the Applicant has likewise amended dependent claims 19-34 in a like manner and for the same purposes, that is, to more clearly and explicitly and more fully recite and define the present invention and the elements and limitations by which the present invention as recited in the dependent claims is patentably distinguished over and from the cited prior art. The amendments include rephrasing certain of the claims, the replacement of certain claims by new claims restating the subject matter of the replaced claims, and the cancellation of certain claims to reduce the issues under consideration and to thereby expedite prosecution and allowance of the present Application. Again, all of these amendments are fully supported by the specification and claims as originally filed, so that these amendments to not add any new subject matter to or alter the subject matter or scope of the invention, the specification or the claims.

Therefore considering the present invention as recited in amended claim 18, the invention recited therein is directed to a method for monitoring and diagnosing errors of drive train components of a motor vehicle by monitoring a transmission route of a drive train control signal. As recited in amended claim 18, the method includes the steps of (1) reading an actual value of a monitored output signal at an output of the transmission route of the drive train control signal, (2) determining by a calculation algorithm a nominal output value corresponding to the monitored output signal resulting from a check variable inserted

into the transmission route before the output of the transmission route, and (3) performing a plausibility check of the monitored output signal by determining whether the actual output value is within an acceptable value of the nominal output value for the current value of the check variable.

As also discussed above with regard to the rejection of claim 18 under 35 U.S.C. § 112, claim 18 further recites that the calculation algorithm is selected such that the nominal output value represents a value of the monitored output signal for the current value of the check variable. That is, the calculation algorithm the calculation algorithm is selected to emulate the processes and operations of the drive train components of the transmission route of the drive train control signal under consideration so that calculated nominal output value for a given check variable represents the corresponding value of the monitored output signal when there are no errors in the drive train components.

The dependent claims, such as amended dependent claims 22, 23, 24, 28, and 32 and new dependent claims 35, 36 and 37, then recite further aspects and limitations of the present invention, such as repetitive checking of the nominal versus actual values of output signals against acceptable ranges of variations, as in claim 22, and various aspects of the embodiments of the checking process.

Therefore next considering the prior art cited in rejection of the claims, Sommer `999 describes a device for controlling a drive train of a motor vehicle and an emergency device that is activated as a result of a failure of the vehicle's electronic control unit. The emergency device and method of overriding of a forward/reverse driving unit (9) are described in detail, but little information is provided on the components or method for triggering the emergency device. Sommer `999 does describe (column 4, lines 26-40) a diagnosis functional block (18) that uses input variables (19) of either a load position of the internal combustion engine, a speed signal of the transmission input shaft, a speed signal of the driven shaft, or the temperature of the pressurizing medium. The diagnosis functional block (18) then determines an "operating point in dependency," "plausibility" and "detection of a serious error", but does not provide any actual description or information on the functional operation of the diagnosis functional block (18). The meaning of the term plausibility as used in Sommer `999 is unclear and undefined, particularly with regard to

measurements by speed, temperature or load position sensors. Sommer `999, in fact, fails to teach, support or suggest a specific method for monitoring and error diagnosis of components of the drive train of a motor vehicle.

In contrast, he Applicant's disclosure and the claims clearly define plausibility and the other terms used in the specification and claims and the functional steps for monitoring and error diagnosis of the drive train of a motor vehicle. The Applicant would refer, for example, to paragraphs [013] and [015] of the specification, which state:

> [013] According to the invention, one signal variable calculated by a function software or by a calculation algorithm is re-read and made plausible at least close to the last possible output position. To this end, according to the first alternative of the method introduced here, on the calculated nominal output value one variable is modulated which moves in the area having no or only a slight, effect on the actual output variable.
>
> [015] According to the invention, the calculated variable to be monitored is re-read on a position lying as far behind as possible in the signal flow. The re-read, modulated actual value is subsequently compared on the output position with the nominal value. Since the nominal value constantly changes, the re-read value also has to change constantly. It is thus ensured that on the way up to the output position no undesired change or no change has occurred as consequence of software and/or hardware errors. Adequate necessary filters or rounding offs or even outs, which could result by the timed cycles, have to be taken into account in the process of making plausible.

It is clear, however, that Sommer `999 fails to teach or suggest essential aspects of the present invention as recited in amended claim 18 and as thereby incorporated by dependency into each of the dependent claims.

For example, Sommer `999 does not teach or suggest a method for monitoring and diagnosing errors of drive train components of a motor vehicle by monitoring a transmission route of a drive train control signal. In complete contrast from the present invention, Sommer `999 instead teaches a method for monitoring the state of a drive train by monitoring certain sensors, such as speed, temperature and pressure sensors, that have no relationship to the transmission route or routes of drive train control signals.

Sommer `999 therefore does not and cannot teach or suggest, for example, the step of reading an actual value of a monitored output signal at an output of the transmission route of the drive train control signal.

In a like manner, Sommer `999 does not and cannot teach or suggest using a calculation algorithm to determine a nominal output value corresponding to the monitored output signal resulting from a check variable inserted into the transmission route before the output of the transmission route. Sommer `999 does not, in fact, teach or suggest inserting any form of check variable value into a transmission route analyze the state of the transmission route and the control signal output.

And lastly, Sommer `999 does not and cannot teach or suggest performing a plausibility check of a monitored output signal by determining whether the actual output value is within an acceptable value of the nominal output value for the current value of the check variable that is inserted into the transmission route.

It is, therefore, the Applicant's belief and position that, for the reasons discussed above, independent claim 18 and dependent claims 22, 23, 24, 28, 32, 35, 36 and 37 and fully and patentably distinguished over and from the teachings of Sommer `999 under the requirements and provisions of 35 U.S.C. § 103.

The Applicant, therefore, respectfully requests that the Examiner reconsider and withdraw all rejections of the claims under 35 U.S.C. § 103 over Sommer `999, and the allowance of the claims as presented herein above.

Next considering the rejection of the claims under 35 U.S.C. § 103 over Sommer `999 in view of Schmidt `223, Schmidt `223 describes data integrity software that may be used on automobiles to prevent incompatible or errant software from being loaded on a vehicle's micro processor system, thus crippling the various controllers used in operation of the vehicle. The data integrity software is static and uses different methodologies of matching certificates or keys to determine that the software being loaded is appropriate for that motor vehicle. For instance the Schmidt `223 software would prevent control software for a 4 cylinder engine from being loaded on a vehicle with a 6 cylinder engine, similar to a PC preventing MacIntosh software from being installed.

In summary, therefore, Schmidt `223 describes only a program for determining whether the correct programs have been installed and whether the programs, if correct, have been installed correctly, but has no functionality at all for checking whether the system that the programs have been installed into is operating correctly

In complete and fundamental contrast from the method of the present invention, therefore, the Schmidt `223 program would not and could not dynamically check whether a program or an element of the system was operating correct, and that there were no errors in the functionality of hardware or software during operation of the vehicle. Again, the Schmidt `223 program is merely a program for checking, statically and one time only, that is, at the program installation, whether the correct program was installed and whether the installation was correct. In complete contrast from the present invention as recited in the present claims, therefore, the Schmidt '223 will not and cannot continuously check the operation of a drive train control signal or drive train signal path during operation of the drive train and there is no teaching, suggestion or hint that such could be desirable or possible in the Schmidt '223 reference.

The Schmidt `223 program could, at most, be used in the system of the present invention only in addition to the method of the present invention and only, for example, to determine whether the correct calculation algorithm or check process was installed and whether the installation was correct. Again, the Schmidt `223 program could not, for example, determine whether the calculation algorithm or the check process was operating correctly, much less whether or not the system itself was operating correctly.

It is, therefore, the Applicant's belief and position that the present invention as recited in claim 18 and in the dependent claims is fully and patentably distinguished over and from the teachings of Schmidt `223 under the requirements and provisions of 35 U.S.C. § 103.

Therefore considering the combination of Sommer `999 in view of Schmidt `223, the combination of the Schmidt `223 data integrity program with the diagnostic block (18) of Sommer `999 would not teach, or suggest to one skilled in the art of control programs and systems that this type of program could be used as a diagnostic. The combination would instead would teach away from this conclusion because one skilled in the art of control software would not consider static, data integrity software that validates only the proper loading of software to be of value in diagnosis and control. Stated another way, the Sommer '999 and Schmidt '223 programs are directed to entirely and fundamentally

different types of operations, so that the combination of these references would not occur to one of ordinary skill in the arts and would not support the obviousness rejection.

For example, and to illustrate further, in order to support an obviousness rejection under 35 U.S.C. § 103(a) the cited references must provide at least some modicum of disclosure supporting the combination of references or their must be an articulate rationale supporting a combination of the references. Neither Sommer '999 nor Schmidt '223 contains any teaching, suggestion or hint that could be interpreted as supporting the combination of references and the combination of Sommer `999 with Schmidt `223 does not and cannot articulate a rationale for such a combination and the combination would not and could not in fact resolve, for example, the lack of functional description of the diagnosis block (18) of Sommer `999.

Instead, Schmidt `223 describes data integrity software that may be used on automobiles to prevent incompatible or errant software from being loaded on a vehicle's micro processor system, thus crippling the various controllers used in operation of the vehicle. The Schmidt `223 data integrity software is therefore static and uses methodologies for matching certificates or keys to determine whether the software being loaded is appropriate for that motor vehicle. For instance this software would prevent control software for a 4 cylinder engine from being loaded on a vehicle with a 6 cylinder engine, similar to a PC preventing MacIntosh software from being installed.

The Schmidt `223 program could not dynamically check that a signal generated by or for a drive train to verify that there are no errors in the functionality of hardware or software of the drive train, as does the present invention. The combination of the Schmidt `223 data integrity software with the diagnostic block (18) of Sommer `999 could not, in fact, teach or suggest to one skilled in the art of control software that this type of software could be used as a diagnostic tool and in fact would be inoperative for a number of reasons. For example, the Schmidt '223 program operates only statically to validate only the proper loading of software while the Sommer '999 program operates only to monitor certain sensors, such as temperature, speed and pressure sensors that are unrelated to the control signals or signal transmission routes of a drive train. The Schmidt '223 and Sommer '999 programs are thereby directly to entirely and fundamentally different functions

that are not compatible with each other, so that the combination of these references would be futile at best and most likely inoperative. In addition, neither the Schmidt '223 program nor the Sommer '999 teaches, suggest or even hints at functions related to those of the present invention, so that there is no combination of Sommer '999 and Schmidt '223 that does or could teach or suggest the present invention as recited in the claims.

It is, therefore, the Applicant's belief and position that, for the reasons discussed above, independent claim 18 and dependent claims 22, 23, 24, 28, 32, 35, 36 and 37 and fully and patentably distinguished over and from the teachings of Sommer `999 in view of Schmidt `223 under the requirements and provisions of 35 U.S.C. § 103.

The Applicant therefore respectfully requests that the Examiner reconsider and withdraw all rejections of the claims under 35 U.S.C. § 103 over Sommer `999 in view of Schmidt `223, and the allowance of the claims as presented herein above.

If any further amendment to this application is believed necessary to advance prosecution and place this case in allowable form, the Examiner is courteously solicited to contact the undersigned representative of the Applicant to discuss the same.

In view of the above amendments and remarks, it is respectfully submitted that all of the raised rejection(s) should be withdrawn at this time. If the Examiner disagrees with the Applicant's view concerning the withdrawal of the outstanding rejection(s) or applicability of the Sommer `999 and Schmidt `223 references, the Applicant respectfully requests the Examiner to indicate the specific passage or passages, or the drawing or drawings, which contain the necessary teaching, suggestion and/or disclosure required by case law. As such teaching, suggestion and/or disclosure is not present in the applied references, the raised rejection should be withdrawn at this time. Alternatively, if the Examiner is relying on his/her expertise in this field, the Applicant respectfully requests the Examiner to enter an affidavit substantiating the Examiner's position so that suitable contradictory evidence can be entered in this case by the Applicant.

In view of the foregoing, it is respectfully submitted that the raised rejection(s) should be withdrawn and this application is now placed in a condition for allowance. Action to that end, in the form of an early Notice of Allowance, is courteously solicited by the Applicant at this time.

The Applicant respectfully requests that any outstanding objection(s) or requirement(s), as to the form of this application, be held in abeyance until allowable subject matter is indicated for this case.

In the event that there are any fee deficiencies or additional fees are payable, please charge the same or credit any overpayment to our Deposit Account (Account No. 04-0213).

Respectfully submitted,

Michael J Bujold, No. 32,018
Customer No. 020210
Davis Bujold & Daniels, P.L.L.C.
112 Pleasant Street
Concord, NH 03301-2931
Telephone 603-226-7490
Facsimile 603-226-7499
E-mail: patent@davisandbujold.com